

MULTIPARTY MONITORING PLAN FOR THE SANTA FE MOUNTAINS LANDSCAPE RESILIENCY PROJECT

*In support of the Greater Santa Fe Fireshed
Joint Chiefs Landscape Restoration Initiative*

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EXECUTIVE SUMMARY

This multiparty monitoring plan is being developed by the Forest Stewards Guild (Guild) under an agreement with the U.S. Forest Service, and is intended to complement and support Forest Service monitoring and community engagement in the Santa Fe Mountains Landscape Resiliency Project. The plan is designed to meet three objectives:

- inform management decisions,
- provide transparency regarding project planning and implementation, and
- provide opportunities for community engagement in project learning.

In 2020, Santa Fe National Forest (SFNF) resource specialists developed a list of high priority monitoring questions for the Santa Fe Mountains Landscape Resiliency Project. From this list, the Forest Service plans to monitor (1) project implementation, including compliance with treatment design features and mitigation measures, (2) effects of prescribed burns on soil, water quality, and range resources, and (3) effects of thinning and burning treatments on cultural resources, Mexican spotted owl habitat and PAC occupancy, and goshawk territory and occupancy

The Guild solicited input from the Greater Santa Fe Fireshed Coalition (GSFFC) monitoring committee to review questions that the SFNF had identified as high priority but for which the agency had low monitoring capacity, and to identify additional monitoring questions important to monitoring committee members. The following questions were selected for multiparty monitoring:

- How are treatments affecting forest and woodland structure?
- How are treatments affecting modeled fire behavior?
- What are downstream water quality conditions before, during, and after treatments?
- What are air quality conditions before, during, and after treatments?
- What are the trends in songbird diversity and abundance in the project area before and after treatments?

The Guild will engage GSFFC monitoring committee members and other technical experts in development of feasible and reliable monitoring protocols to answer each multiparty monitoring question, then pilot the monitoring protocols and suggest revisions to the plan, as appropriate. In addition, the Guild is designing a process that will engage interested stakeholders in interpreting monitoring results and applying them to future restoration planning and resource management. However, additional funding will be required to support monitoring coordination, data collection, data analysis, review, and reporting.

INTRODUCTION

The Santa Fe National Forest (SFNF) is planning restoration in an approximately 50,566-acre area called the Santa Fe Mountains Landscape Resiliency Project. This project lies mostly within the Greater Santa Fe Fireshed, a 107,000-acre landscape in the southern Sangre de Cristo Mountains around Santa Fe, New Mexico that faces significant threat from fire and post-fire flooding and debris flows. At risk are Santa Fe's municipal watershed serving over 80,000 people, traditional resources used by Native American and Hispanic people, and homes in the many neighborhoods and small communities in the Santa Fe vicinity. Important public infrastructure as well as recreational facilities are also at risk.

PROJECT PURPOSE AND NEED

The purpose of the Santa Fe Mountains Landscape Resiliency Project is to improve the ecosystem resilience of a priority landscape to future disturbances by restoring forest structure and composition and reducing the risk of catastrophic wildfire. To increase the resilience of the forests and watersheds in the project area, there is a need to:

- Move frequent-fire forests in the project area towards their characteristic species composition, structure and spatial patterns in order to improve ecological function;
- Create conditions that facilitate the safe reintroduction of fire, allowing fire to play its natural role in frequent fire forest types;
- Reduce the risk for large high-intensity wildfires, create safe, defensible zones for firefighters and minimize the risk of fire to nearby valued resources;
- Improve and maintain diverse wildlife habitats to provide a large array of habitat types, habitat components, seral states and corridors for a variety of species that utilize the area; and
- Improve watershed conditions by restoring the vegetation structure and composition of riparian ecosystems and by maintaining and improving water quality.

FOREST STEWARDS GUILD AND THE GREATER SANTA FE FIRESHED COALITION

The Forest Stewards Guild is responsible for developing and piloting this multiparty monitoring plan for the Santa Fe Mountains Landscape Resiliency Project. The Greater Santa Fe Fireshed Coalition's Monitoring committee is contributing to that effort by participating in identification and prioritization of monitoring questions and development of appropriate monitoring protocols.

The Forest Stewards Guild (Guild) is a Santa Fe-based organization that practices and promotes responsible forestry as a means of sustaining the integrity of forest ecosystems and the human communities dependent upon them. The Guild engages in education, training, policy analysis, research, and advocacy to foster excellence in stewardship, support practicing foresters and allied professionals, and engage a broader community in the challenges of forest conservation and management.

The Greater Santa Fe Fireshed Coalition (GSFFC) was formed in early 2016 to address wildfire in the 107,000-acre Greater Santa Fe Fireshed. Members of the coalition include New Mexico State Forestry, U.S. Geological Survey, the Pueblo of Tesuque, the City of Santa Fe, Santa Fe County, the Santa Fe National Forest (SFNF), the Santa Fe-Pojoaque Soil & Water Conservation District, and the New Mexico

Forest & Watershed Restoration Institute, as well as several non-governmental groups, including The Nature Conservancy, the Santa Fe Watershed Association, and Forest Stewards Guild. The Fat Tire Society, New Mexico Department of Game and Fish, Sierra Club, and other organizations have also been active contributors to the coalition. The GSFFC's mission is to use a proactive, collaborative approach to improve the health and long-term resilience of forested watersheds and communities by addressing wildfire. This multiparty monitoring plan is in line with the Coalition's Resilience Strategy, the NM Forest Action Plan, Agreement for Shared Stewardship and other ongoing efforts to improve forest conditions and wildlife habitat in the Fireshed.

ABOUT THIS MULTIPARTY MONITORING PLAN

This multiparty monitoring plan is being developed by the Forest Stewards Guild under an agreement with the U.S. Forest Service, and is intended to complement and support Forest Service monitoring and community engagement in the Santa Fe Mountains Landscape Resiliency Project. The Guild solicited input from the GSFFC to identify and prioritize monitoring objectives and monitoring questions for this project and will engage GSFFC Monitoring committee members and other technical experts in development of feasible and reliable monitoring protocols to answer each question. In 2022, the Guild will pilot the monitoring protocols and suggest revisions to the plan, as appropriate. Additional funding will be required to support monitoring coordination, data collection, data analysis, review, and reporting.

This plan lists monitoring questions that will be addressed by the Santa Fe National Forest and proposed multiparty monitoring questions identified and prioritized by the GSFFC's Monitoring committee and the SFNF. It also includes a proposed community science bird monitoring effort developed based on public commentary through the NEPA process and other community engagement activities. A proposed review process would allow the monitoring committee, working with SFNF resource specialists and other interested individuals, to periodically review interim monitoring results and make recommendations for future restoration planning and management actions.

MONITORING OBJECTIVES

Monitoring on the Santa Fe Mountains Landscape Resiliency Project serves three main purposes:

- Inform management decisions (status and trends monitoring and effectiveness monitoring);
- Ensure compliance with project design features and avoidance measures (implementation monitoring); and
- Provide opportunities for community engagement in project assessment and learning (community science and project review).

The different types of monitoring that may be used to achieve these objectives are described below.

STATUS AND TRENDS MONITORING

Status and trends monitoring measures the condition of a resource of interest at a given point in time and over time, without attempting to definitively determine the cause of observed conditions or changes in conditions. Status and trends monitoring helps inform project planning and management actions by identifying desirable and undesirable states or changes in resource conditions.

EFFECTIVENESS MONITORING

Effectiveness monitoring provides data on the degree to which treatments are restoring the forest ecosystem by measuring specific resource conditions before and after management actions and comparing changes to the desired outcomes described in project plans. Effectiveness monitoring can provide considerable added value to our understanding of the ability of forest treatments to attain restoration goals and identify areas for learning and improvement to apply to future work.

IMPLEMENTATION MONITORING

Implementation monitoring tracks the degree to which project activities are carried out as planned. It provides transparency by providing data on project outputs and compliance with design features, best management practices, and mitigation measures set by laws, regulations, applicable standards, and project specifications.

COMMUNITY SCIENCE

Involving members of the greater community in collecting and analyzing monitoring data serves the concurrent purposes of generating additional data and involving interested or concerned individuals in shared learning with restoration scientists and resource managers. For this project, members of the public will be invited to participate in the community science bird monitoring initiative and possibly other monitoring methods such as repeat photo points.

PROJECT REVIEW

Including an explicit project review process in a monitoring plan helps ensure that the objectives of shared learning and informing management will be met. As proposed in this plan, analyzed monitoring data will be shared with SFNF personnel, the GSFFC, and other interested stakeholders on field trips, at annual review meetings, and in written summaries. These forums provide opportunities for participants to learn about and provide feedback on resource conditions and project implementation, outputs, and outcomes.

FOREST SERVICE MONITORING

The SFNF is planning to use status and trends (condition) monitoring, implementation monitoring, and effectiveness monitoring to address the questions listed below. Condition monitoring will be used to select treatments and treatment locations. Implementation monitoring will be conducted in treatment units to assess compliance with project specifications and best management practices, including impacts to cultural resources. In areas that have experienced moderate or high-severity burning, the SFNF will conduct post-treatment condition monitoring of water quality, soil, and forage. In addition, the SFNF will use effectiveness monitoring to evaluate treatment impacts on Mexican spotted owl and goshawk occupancy and habitat. The questions that will be answered through Forest Service monitoring are listed below.

PRE-IMPLEMENTATION

- Where are treatments needed and what treatments are most appropriate?

IMPLEMENTATION AND COMPLIANCE

- Are projects adhering to specifications, including implementation of silvicultural prescriptions, design features, best management practices, and mitigation measures?
- What restoration treatments are being applied to the project area?

CULTURAL RESOURCES

- What are the effects of implementation on cultural resources?

WATERSHED CONDITIONS

- What are the cumulative effects of moderate and high severity burning on soil, water quality, and range resources?

MEXICAN SPOTTED OWLS

- How are thinning and burning treatments impacting Mexican spotted owl PAC occupancy?
- How are thinning and burning treatments impacting Mexican spotted owl PAC and nest/roost habitat?

GOSHAWKS

- How are thinning and burning treatments impacting goshawk territory occupancy?
- How are thinning and burning treatments impacting goshawk territory habitat?

MULTIPARTY MONITORING

The multiparty monitoring process benefits the project by bringing together stakeholders with different backgrounds and perspectives in order to 1) promote mutual learning, build trust, build positive relationships and reduce the potential for future conflicts; and 2) leverage the expertise and capacity of resources outside the Forest Service to facilitate project monitoring. Further, the multiparty monitoring process provides opportunities to improve public understanding of and engagement in forest restoration and fire management. By witnessing first-hand the impacts and outcomes of restoration treatments, participating individuals can gain a better sense of forest health and how restoration efforts can improve forest health within the Fireshed.

The following section discusses multiparty monitoring protocol development that will be piloted under the Guild's agreement with the Forest Service. Further implementation, including data collection, data analysis, interpretation, and application will depend on future funding availability.

Proposed multiparty effectiveness monitoring would include measuring treatment effects on forest and woodland structure and modeling changes in fire behavior. Status and trends monitoring of water quality and air quality would be tracked using existing data compiled from sources such as the City of Santa Fe, Santa Fe County, and the New Mexico Environmental Department. A community science project would measure songbird diversity and abundance in the project area before and after treatments. In addition to this opportunity for direct involvement in data collection and analysis, interested stakeholders would be

invited to participate in project learning and evaluation through field trips and annual review meetings, as described below under *Interpreting and Using Results*. The following questions have been identified as priorities for multiparty monitoring, pending future funding.

FOREST AND WOODLAND STRUCTURE

- How are treatments affecting forest and woodland structure?
- How are treatments affecting fuel loads?

FIRE MODELING

- How are treatments affecting modeled fire behavior (surface, torching, crowning, flame lengths)?

WATER QUALITY

- What are downstream water quality conditions before, during, and after treatments?

AIR QUALITY

- What are air quality conditions at treatment sites and in the broader airshed before, during, and after treatments?

SONGBIRDS

- What are the trends in songbird diversity and abundance in the project area before and after treatments?

MONITORING PROTOCOLS

Monitoring protocols are currently under development. For each monitoring question, protocols will include metrics to be measured, sampling design and data collection methods, a data analysis schedule, and data management plan.

INTERPRETING AND USING RESULTS

Research has found that when multiparty monitoring includes opportunities for frequent, multi-stakeholder review of analyzed data it can catalyze learning and improve decision-making. On the other hand, investing resources in gathering monitoring data that are not analyzed, reported, and used to inform future work is a frequent source of frustration. Pending future funding, this monitoring plan aims to use the monitoring data to avoid that frustration and support restoration learning and decision-making through regularly scheduled reporting, technical review, and field trips, as described below.

ANNUAL REPORTING

Annual project status reporting will describe implementation completed and lessons learned to date, include analyzed monitoring data presented in simple language, and compare these interim results to project objectives. Making reporting materials available online will facilitate their distribution. Providing opportunities for questions and feedback on the project status will help build transparency and trust among the SFNF, multiparty monitoring participants, and the broader public.

TECHNICAL REVIEW MEETINGS

A volunteer technical review team including GSFFC monitoring committee members and coalition leaders, SFNF personnel, individuals directly involved with monitoring, and others with relevant monitoring expertise or scientific knowledge will be convened annually to review and help interpret monitoring data in the context of broader resource conditions and restoration activities. One framework for structuring such meeting is the after-action review, whereby participants organize their discussion around questions such as:

- What did we set out to do?
- What did we actually achieve?
- What unexpected things happened, and how did we respond?
- What went well?
- What could have gone better?
- What do we want to do differently in future?
- What additional information do we need?

The purpose of the technical review process is not to critique the project purpose or promote specific research projects, but to provide perspective and pragmatic feedback based on field experience, interim monitoring results, and expert knowledge. Ideally such meetings are informed by pre-prepared handouts or presentations summarizing planned treatment implementation and monitoring, work completed to date, any deviation from planned actions, and analyzed monitoring data. It is important that individuals directly involved in project implementation and monitoring participate in these discussions to keep them focused on what actually happened in the field. Meetings may be facilitated by a neutral facilitator to ensure that feedback is focused on learning to improve future restoration efforts and not criticizing individuals or past actions. In some cases, there may be new, regionally appropriate research results that could be shared and used to inform the discussion. Technical review meetings could be paired with a shorter public meeting to report and review findings.

FIELD TRIPS

Field trips provide an opportunity for interested stakeholders to observe resource conditions and discuss project implementation and interim monitoring results. Annual field trips to representative restoration sites pre- and post-treatment help make discussions of the need for treatment, implementation and monitoring results, and lessons learned tangible and more meaningful. Field trips are often the best forums for surfacing stakeholder questions. Field trips may be held for the technical review panel and monitoring committee to discuss project progress and necessary updates. Field trips may also be held for the public to demonstrate before and after conditions, how treatments are monitored, and to discuss how monitoring weighs into land management decisions.

MONITORING PROGRAM COORDINATION

Experience has shown that monitoring success depends on having a designated (and funded) coordinator or team responsible for tracking implementation of planned monitoring protocols, coordinating field trips and community science activities, compiling interim and final monitoring results, and maintaining communication among partners and other interested parties over the life of the project. It is expected this role will be filled by the chair of the Greater Santa Fe Fireshed Coalition's monitoring committee, in coordination with the SFNF Fireshed Coordinator.

APPENDIX I: THE GSFFC MONITORING COMMITTEE

The GSFFC Monitoring committee was established as a subgroup of the Coalition. The Committee is open to anyone from the Coalition. It is a voluntary group comprised of experts in a range of subjects and includes NM State Forestry; local NGOs such as Forest Stewards Guild, NM Forest and Watershed Institute, The Nature Conservancy and The Sierra Club; U.S. Forest Service; Pueblo of Tesuque Environment Department; City of Santa Fe Water Division; and residents. The Monitoring committee makes recommendations to the Coalition on potential monitoring actions. The process to make decisions on monitoring priorities and operations is based on available funding, and in this case, a close relationship between the Forest Service and the Coalition. It has been the practice and will continue to be the intention of the Monitoring committee to work to further the goals of the Coalition by developing monitoring projects, measurement protocols, and monitoring responsibilities that reflect the Coalition's active projects and future goals. The GSFFC Monitoring committee is fortunate to have multiple partners with significant expertise in forest restoration. The involvement of these various groups bring monitoring knowledge, data, and intellectual diversity to ensure a fair assessment of restoration success.

APPENDIX II: OTHER MONITORING QUESTIONS CONSIDERED

The following are monitoring topics of interest for the Santa Fe Mountains Landscape Resiliency Project, but are not included in the Forest Service's NEPA monitoring plan or the multiparty monitoring plan due to current capacity constraints. With additional funding or new partnership opportunities, status and trends or effectiveness monitoring of these resources would be of interest:

- Threatened, endangered, or sensitive plant occurrence
- Ips beetle spread
- Leave-islands, openings, patch size distribution and coverage
- Understory composition
- Habitat connectivity
- Migratory birds
- Trails
- Additional fuel loads and fire behavior modeling
- Additional archaeological/heritage sites
- Stream shade and stream temperature in the San Crisobol Arroyo-Galisteo Creek Subwatershed
- Water quality in the Headwaters Santa Fe River (municipal) subwatershed
- Riparian vegetation structure and composition (NMED, USFS, or EPA rapid assessment protocol)
- Direct economic impacts
- Community perceptions of restoration
- Collaboration effectiveness